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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/823,838

03/30/2001

Benjamin P. Olding

M-11119 US

6117

32566

7590

11/02/2004

PATENT LAW GROUP LLP  
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SAN JOSE, CA 95134

EXAMINER

JELINEK, BRIAN J

ART UNIT

PAPER NUMBER

2615

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

### Application No.

09/823,838

### Applicant(s)

OLDING ET AL.

### Examiner

Brian Jelinek

### Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-13 is/are allowed.
- 6) ☒ Claim(s) 14,15 and 17-19 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/30/2001.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

### **DETAILED ACTION**

This is a first office action in response to application no. 09/823,838 filed on 3/30/2001 in which claims 1-19 are presented for examination.

#### ***Drawings***

Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoneyama (JP 04-313949).**

Regarding claim 14, Yoneyama teaches a method for generating electrical signals representing an image in a digital image sensor (Prior Art, 0002), comprising: generating digital signals as k-bit pixel data (Method to Solve the Problem, 0008, read output level) at a plurality of exposure times (Fig. 6), said pixel data being associated with each pixel element in a sensor array of pixel elements and corresponding to a level of an analog signal indicative of a light intensity impinging on said pixel element; determining if said pixel data of a first one of said pixel elements exceeds a predetermined threshold value (Method the Problem, 0008, standard level; Operational Example, 0023,  $\frac{1}{2}$  of the saturated output); if said pixel data exceeds said predetermined threshold value at exposure times before a last one of said plurality of exposure times (Fig. 6, cases A and B; Operational Example, 0015 and 0016), storing an m-bit time index value (Method to Solve the Problem, 0008, number of reading operations) in a location in a data memory associated with said first one of said pixel elements to a first value indicating said exposure time; and storing the lower r bits of said pixel data in a location in said data memory (Method to Solve the Problem, 0008, read output level, where  $r=k$ ), said data memory including  $r+m$  bits of memory space for each pixel element; and if said pixel data does not exceed said predetermined threshold value (Fig. 6, case D), setting a portion of said time index value in said data memory associated with said first one of said pixel elements to a second value, and storing k bits of pixel data in said data memory (Operational Example, 0020; Fig. 6, case D).

Regarding claim 15, Yoneyama teaches if said pixel data does not exceed said predetermined threshold value before said last one of said plurality of exposure times, storing said k bits pixel data in said data memory for pixel data recorded in said last one of said plurality of exposure times (Operational Example, 0020; Fig. 6, case D).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoneyama (JP 04-313949) in view of Reitmeier et al. (U.S. Pat. No. 6,560,285).**

Regarding claim 17, Yoneyama teaches generating at a plurality of exposure times digital signals in k-bit as pixel data (please see the 102 rejection of claim 14). Yoneyama does not teach companding the pixel data.

However, Reitmeier et al. teaches companding k-bit pixel data into h bits, h being less than k and storing (some form of buffering is inherent in transporting the data) the lower r bits of the pixel data in a data memory comprises storing the lower h-1 bits of said pixel data. In particular, Reitmeier et al. teaches encoding 10-bit image information as an 8-bit image signal with a compander in order to provide an image signal that is suitable to be transported according to lower dynamic range techniques (col. 1, line 54-col. 2, line 7). Further note that, in the case where  $r=k$  and  $h=k-1$ , the lower h-1 bits would be stored since h bits are stored. One of ordinary skill in the art would have provided the compander of Reitmeier et al. in order to map the high dynamic range image information from an image sensor to a lower dynamic range suitable for transportation (col. 1, line 54-col. 2, line 7). As a result, it would have been obvious to one of

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ordinary skill in the art at the time of the invention to provide the compander of Reitmeier et al. for the purpose of performing the slight compression of the image signal in order to map the high dynamic range image information of Yoneyama's image sensor to a lower dynamic range image signal suitable for transportation (col. 2, lines 5-10).

Regarding claim 18, please see the 103 rejection of claim 17 and note that when  $r=k$ , for a both conditions when pixel data exceeds and does not exceed a predetermined threshold value before a last one of a plurality of exposure times,  $h$  bits of pixel data will be stored in data memory.

Regarding claim 19, please see the 103 rejection of claim 17.

### ***Allowable Subject Matter***

**Claims 1-13, and 16 are allowable or would be allowable if rewritten to overcome any and all objections.**

Regarding claim 1, the reason for allowance is as follows: the prior art of record does not disclose or fairly suggest the combination of limitations claimed in claim 1, in particular there is no suggestion for storing the lower  $r$  bits, where  $r=k+t-m$  when a data memory includes  $k+t$  bits, corresponding to Pixel C and Pixel D in Fig. 6 of the instant invention.

Regarding claims 2-13, the reason for allowance is as follows: the claims depend from claim 1.

Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims because the prior art of record does not disclose or fairly suggest the combination of the limitations of claim 14 wherein  $r=k-1$ .

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yang et al. (U.S. Pat. No. 6,369,737) discloses extending the dynamic range of an image sensor by using floating point notation and exponentially related time intervals.

Yang et al. (IEEE, Vol. 34, No. 12) discloses extending the dynamic range of an image sensor by using floating point notation and exponentially related time intervals.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Jelinek whose telephone number is (703) 305-4724. The examiner can normally be reached on M-F 8:00 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on (703) 308-9644. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian Jelinek  
9/29/2004



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